

AD-A139 937

YEARS IN SERVICE AND WORK OUT-PUT: A CORRELATION  
ANALYSIS(IU) ARMY HEALTH CARE STUDIES AND CLINICAL  
INVESTIGATION ACTIVITY FORT SAM HOUSTON TX U A BRUSCH  
OCT 83 HCSCIA-84-002 F/O 8/5

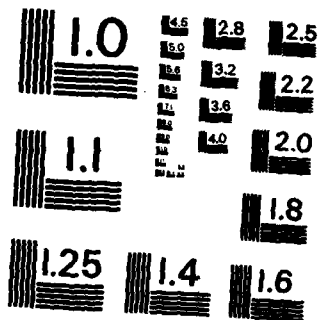
1/1

UNCLASSIFIED

NL



END  
DATE  
FILMED  
5 84  
DTIC



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

2

**United States Army  
Health Care Studies**



**and**

**Clinical Investigation Activity**

AD A139937

**YEARS IN SERVICE AND WORK OUT-PUT:**

**A CORRELATION ANALYSIS**

**COL Walter A. Brueck**

**FINAL DENTAL CONSULTATION  
REPORT 604-002**

**October 1953**

FILE COPY

REC  
S  
D

**NOTICE**

The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

Regular users of the services of the Defense Technical Information Center (per DOD Instruction 5200.21) may purchase copies directly from the following:

Defense Technical Information Center (DTIC)  
ATTN: DTIC-DDR  
Cameron Station  
Alexandria, VA 22314

Telephones: AUTOVON (108) 28-47633, 34, or 35  
Commercial (202) 27-47633, 34, or 35

All other requests for these reports will be directed to the following:

US Department of Commerce  
National Technical Information Services (NTIS)  
5285 Port Royal Road  
Springfield, VA 22161

Telephone: Commercial (703) 487-4600

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT OR DOCUMENTATION Report #84-002		2. GOVT ACCESSION NO. <b>AD A139937L</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)  YEARS IN SERVICE AND WORK OUT-PUT: A CORRELATION ANALYSIS		5. TYPE OF REPORT & PERIOD COVERED  Final Report Oct 83	
7. AUTHOR(s)  COL WALTER A. BRUSCH		6. PERFORMING ORG. REPORT NUMBER #84-002	
9. PERFORMING ORGANIZATION NAME AND ADDRESS  Health Care Studies, Academy of Health Sciences, Ft. Sam Houston, Texas 78234		8. CONTRACT OR GRANT NUMBER(s)	
11. CONTROLLING OFFICE NAME AND ADDRESS Health Care Studies and Clinical Investigation Activity, Health Services Command, Ft. Sam Houston, Texas 78234		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE October 1983	
		13. NUMBER OF PAGES 12	
		15. SECURITY CLASS. (of this report) Unclassified	
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; unlimited distribution.			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)			
18. SUPPLEMENTARY NOTES			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  Military Dentistry; Dental Management; Dental Workload; Years in Service; Increases in Work Out-put; Dental Productivity			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  A correlation coefficient of 0.675 indicates a significant correlation between years in the Army Dental Corps and work out-put. A one-way analysis of variance (ANOVA) demonstrated that dentists in their fourth-to-sixth year in the Dental Corps produced a significantly greater amount of work out-put when compared to a similiar group of dentists in their first-to-third year of service. A New Multiple Range Test (Duncan Procedure) indicated significant differences between several of the six years. <b>A</b>			

\*\*\*\*\*

### EXECUTIVE SUMMARY

A correlation coefficient of 0.675 indicates a strong correlation between years in the Army Dental Corps and work out-put. (TABLE 4 and FIGURE 1) A one-way analysis of variance(ANOVA) demonstrated that dentists in their fourth-to-sixth year in the Dental Corps produced a significantly greater amount of work out-put when compared to a similiar group of dentists in their first-to-third year of service. (TABLE 2) A New Multiple Range Test (Ducan Procedure) indicated significant differences between several of the six years. (TABLE 3)

\*\*\*\*\*

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	



## **YEARS IN SERVICE AND WORK OUT-PUT: A CORRELATION ANALYSIS**

This pilot study on work out-put was requested by the Assistant Surgeon General for Dental Services, as part of the FY 84 Dental Study Program "Time Utilization in the Army Dental Care System." Its purpose is to provide current knowledge of time utilization to managers of The Dental Care System.

The objective of the pilot study was to determine if there is a significant difference in work out-put between Dental Corps officers in their first three years of service versus a similar group who had completed their initial obligation and were receiving dental continuation pay.

This pilot study used data that was originally collected as part of a personnel management analysis program at a major U.S. Army Dental Activity. The data consisted of measures of work out-put per hour performed during a two-week period of time. (TABLE 1) The measure of work out-put was derived from relative "dollar" values assigned to dental procedures. All data was derived from general dentists working with one assistant and who had entered the Dental Corps within one year of graduation from dental school.

The results of the study indicated that dentists sampled in this study produced an average of 50.1 dollars per hour during their first three years of duty versus an average of 68.1 dollars per hour produced by a similar group of dentists during the fourth to sixth years of service. A one-way analysis of variance (ANOVA) further further demonstrated that this difference is significant at the .01 level. (TABLE 2) Significant differences between the means of each group is indicated in TABLE 3.

The strength of the association of years in service to increases in work out-put was tested by correlation and linear regression analysis. (Table 4) The correlation coefficient, from this analysis, of 0.675 indicates that increases in work out-put occurring as a dentist is retained beyond his first three years of service could not have occurred by chance and that the two variables, years in service and increases in dental treatment out-put, are strongly related within the one-to-six year groups of dental officers surveyed. (Figure 1).

TABLE 1

\*\*\*\*\*

Data collected from 10 day working periods during:

- a. 1981; October
- b. 1982; January, March, August
- c. 1983; January, May, August

The data was obtained from a personnel management program and because of the small sample size, may not be representative of the total population of Army dentists in their first six years of service

TABLE 1

RAW DATA: WORK OUT-PUT MEASURED IN PROCEDURE DOLLAR VALUES/HOUR

FIRST YEAR: N=13; MEAN=39.08; SD=6.84V  
31,43,41,33,35,51,31,43,51,35,40,33,41.

SECOND YEAR: N=29; MEAN=50.03; SD=9.13  
59,57,40,66,65,64,48,44,43,41,54,50,57,35,53,51,41,41,41,54,57,66  
51,35,48,48,50,38,54.,,

THIRD YEAR: N=16; MEAN=59.19; SD=11.32  
66,47,49,79,61,50,71,68,62,59,81,49,59,51,48,47.

FOURTH YEAR: N=10; MEAN=65.8; SD=18.74  
99,72,55,61,45,88,81,49,45,63.

FIFTH YEAR: N=4; MEAN=66.25; SD=8.85  
53,71,71,70.

SIXTH YEAR: N=4; MEAN=77.25; SD=11.67  
93,67,79,70.



TABLE 2

## ANALYSIS OF VARIANCE

( ONE TO THREE YEARS VERSUS FOUR TO SIX YEARS)

## SUMMARY TABLE

SOURCE	SS	DF	MS
TOTAL	16545	75	
BETWEEN	4621.05	1	4621.05
WITHIN	11924	74	161.135

F-RATIO = 28.6781

DEGREES OF FREEDOM = 1 &amp; 74

PROBABILITY OF CHANCE = 0.000

## GROUP STATISTICS

GROUP	N	MEAN	S.D.
1 TO 3 YEARS	58	50.1035	11.6389
4 TO 6 YEARS	18	68.4444	15.7228

TABLE 3

\*\*\*\*\*

MULTIPLE RANGE TEST

DUNCAN PROCEDURE

(\*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

MEAN	GROUP	G G G G G G R R R R R R P P P P P P					
		1	2	3	4	5	6
39.0769	GRP 1						
50.0345	GRP 2	*					
59.1875	GRP 3	*	*				
65.1111	GRP 4	*	*				
66.2500	GRP 5	*	*				
77.2500	GRP 6	*	*	*			

TABLE 4

\*\*\*\*\*

CORRELATION & LINEAR REGRESSION

VARIABLE X: YRS IN SERVICE VARIABLE Y: \$ PER HOUR

MEAN OF X = 2.67105 MEAN OF Y = 54.4342

S.D. OF X = 1.33168 S.D. OF Y = 14.733

NUMBER OF PAIRS (N) = 76

CORRELATION COEFFICIENT (R) = .675

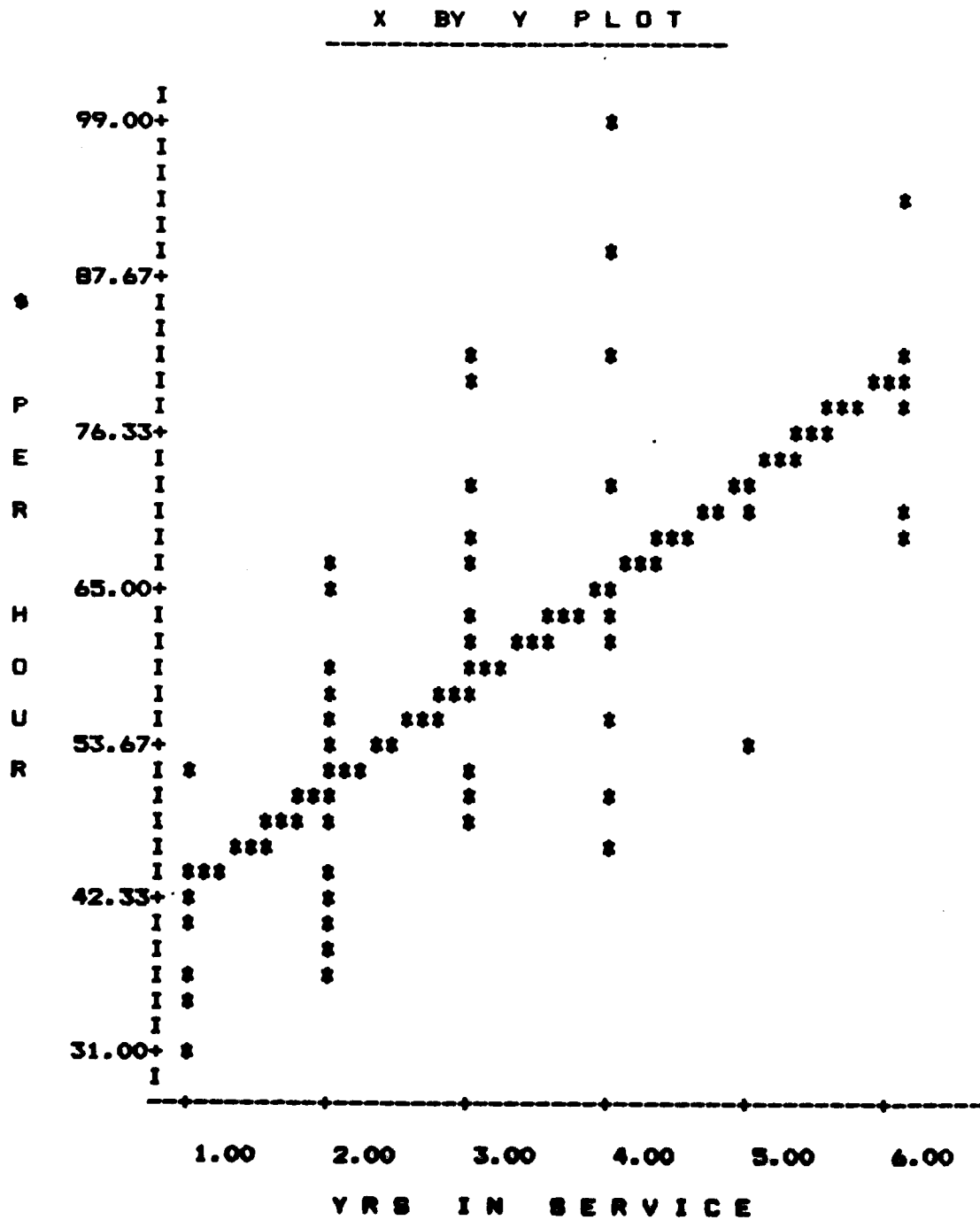
DEGREES OF FREEDOM (DF) = 74

SLOPE (M) OF REGRESSION LINE = 7.46314

Y INTERCEPT (B) FOR THE LINE = 34.4998

FIGURE 1

\*\*\*\*\*



DISTRIBUTION:

Defense Technical Information Center (DTIC) (2)

HQDA (DASG-DC) (1)

Director, Joint Medical Library, Offices of The Surgeons General, USA/USAF,  
The Pentagon, Rm 1B-473, Washington, DC 20310 (1)

HQ USA HSC (ATTN: HSDC) (1); (ATTN: HSDS) (1)

HQ 7th MEDCOM (ATTN: AEMDC) (1); (ATTN: AEMDS) (1)

Commander, 10th Medical Detachment (DS) (1)

HQDA (DASG-HCD-S) (1)

AHS USA, Stimson Library (1)

Defense Logistics Studies Information Exchange, USA Logistic Management  
Center, Fort Lee, VA 23801 (1)

EN  
DAT